Textile Products Division

CIBA-GEIGY Corporation
P.O. Box 18300
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CIBA-GEIGY (1)

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September 4, 1992

(A)

Document Processing Center (TS-790)
Office of Toxic Substances
Environmental Protection Agency
401 M. Street, SW
Washington, DC 20460

**Attention: Section 8(e) Coordinator (CAP Agreement)**

**RE: 8E CAP - 0024**

Dear Section 8(e) Coordinator:

Enclosed are triplicate copies of four studies CIBA-GEIGY Corporation is submitting pursuant to the TSCA Section 8(e) Compliance Audit Program and CAP Agreement number 8E CAP-0024. We are submitting the following information, as required by the CAP Agreement:

Company Name: CIBA-GEIGY Corporation
444 Saw Mill River Road
Ardsley, New York 10502-2699

Attention: Mr. Anthony Di Battista
Manager, Regulatory Affairs & Toxic Substances Compliance
Telephone (914) 479-2776

Tested Chemical:

Benzenesulfonic acid, 4-{{5-methoxy-4-{(4-methoxyphenyl)azo}-2-methyl phenyl}azo}-, sodium salt;

also identified as:

Acid Orange 2GN 100%
Erionyl Orange 3G

CAS No.: 68555-86-2

09/09/95

(2)

Report Titles:

1. Acute Dust Inhalation Toxicity Study with Acid Orange 2GN in Albino Rats (identified as IBT No. 8562-08818, dated 9/22/76)

2. Acute Dust Inhalation Toxicity in Osborne-Mendel Rats (Report No. 52, UM No. 87, dated 2/17/77)

3. Evaluation of the Acute Inhalation Toxicity of Erionyl Orange 3G (Project Number 774-055, dated 5/17/77)

4. Acute Dust Inhalation Toxicity Study with Erionyl Orange 3G in Albino Rats (identified as IBT No. 10776, dated 9/27/77)

Summary:

The initial study involved exposure of three groups of rats (5/sex/group) to the test material at concentrations of 0.061, 0.57, and 5.1 mg/L. Mortality rates associated with these exposures were 2/10, 8/10 and 8/10, respectively leading to an estimation of the LC50 of > 0.061 and < 0.57 mg/L. Necropsy findings included thin clear (serous) fluid in the thorax and test material in the GI tract in rats of the two highest dose groups.

In a subsequent corroborative study, five rats/sex were exposed to the test material for one hour at an estimated mean concentration of 0.68 mg/L. There were no deaths during the exposure, but all exposed animals died between 15 and 48 hours after inhalation exposure. Post mortem examinations showed marked pulmonary congestion, patches of emphysema, and hemorrhagic areas throughout the lungs.

In the third study, 10 rats (5/sex) were exposed for 4 hours to the test material at a concentration of 1.02 mg/L. No deaths occurred during exposure, but all females and 3/5 males died within 24 hours post-exposure. Severe pulmonary damage was noted at necropsy.

In the fourth study, ten rats (5/sex) were exposed to the test material for four hours at a concentration of 2.04 mg/L. Mortality was recorded in 4/5 males and 4/5 females but no gross tissue changes were observed at necropsy.

While it cannot be ruled out that ingestion of the test material may have contributed to the toxicity observed, these data taken together support a conclusion that the test material is toxic via inhalation and the effects described appear to meet the criteria for reporting under section 8(e) of TSCA.

(3)

Category: Unit II.B.2.b

Prior Reporting: Not Applicable

Please call the undersigned at telephone number (919) 632-2889 if you have any questions about this submittal.

Very Truly Yours,

Joseph A. LoMenzo, Ph.D.
Product Stewardship Director
Textile Products Division

Enclosures
2 copies of this letter
3 copies of each study

cc: A. Di Battista

kh/tsca8e/rv43.doc

ID# ¢2111

*Industrial* **BIO-TEST** *Laboratories, Inc.*
1810 FRONTAGE ROAD
NORTHBROOK, ILLINOIS 60062

REPORT TO

CIBA-GEIGY CORPORATION

# ACUTE DUST INHALATION TOXICITY STUDY WITH ACID ORANGE 2GN IN ALBINO RATS

SEPTEMBER 22, 1976

IBT NO. 8562-08818

These study results apply only to acute exposure and should not be used to determine possible repeated or prolonged exposure effects.

/ ACID ORANGE 2GN=ERIONYL ORANGE 3G

Industrial BIO-TEST Laboratories, Inc.
1810 FRONTAGE ROAD
NORTHBROOK, ILLINOIS 60062

September 22, 1976

Dr. Martin E. Bernstein
Industrial Medicine
CIBA-GEIGY Corporation
Ardsley, New York 10502

Dear Dr. Bernstein:

Re: IBT No. 8562-08818 - Acute Dust Inhalation Toxicity Study with Acid Orange 2GN 100%/Mix 72/TR 76-233 in Rats

We are submitting herewith our laboratory report prepared in connection with the above study.

Very truly yours,

J. C. Calandra

J. C. Calandra
President

JCC/fd

# REPORT TO CIBA-GEIGY CORPORATION

## ACUTE DUST INHALATION TOXICITY STUDY IN RATS

Test Material: Acid Orange 2GN
100%/Mix 72/TR 76-233
Form Administered: Dust
Acute $LC_{50}$: > 61 mg/$m^3$ air
< 570 mg/$m^3$ air

Strain: Charles River Rats
Exposure Time: 4 hours
Observation Period: 14 days
IBT No. 8562-08818

Generation of Test Material:

Dust was suspended by passing a stream of clean, dry air (-40°C dew-point) through a dust shaker mechanism containing the test material. The resulting air-dust mixture was then introduced into the exposure chamber.

Chamber Conditions

| Group No. | Size (liters) | Atmospheric Pressure (inches Hg) | Temperature (°C) | Air Flow (l/min) |
|---|---|---|---|---|
| T-I | 80 | 28.84 | 25 | 1.50 |
| T-II | 80 | 29.78 | 25 | 3.00 |
| T-III | 80 | 29.61 | 25 | 20.00 |

Results

| Group No. | Total Number of Animals Male/Female | Analytical Concentration | Mortality Male-Female | Weight Gain Male-Female (grams) |
|---|---|---|---|---|
| T-I | 5/5 | 61 mg/$m^3$air | 1/5* - 2/5 | 42-30 |
| T-II | 5/5 | 570 mg/$m^3$air | 4/5 - 4/5 | 47-41 |
| T-III | 5/5 | 5,100 mg/$m^3$air | 3/5 - 4/5 | 47-0 |

* Accidental Death.

Remarks

There were no untoward reactions noted. Individual mortality data are presented in Table I.

Body weight gains for all surviving T-I, T-II rats and T-III male rats were within the normal limits. One surviving female T-III rat showed a below normal weight gain.

Particle size distribution data are presented in Table II.

The pathologist's statement is presented on page 5.

Respectfully submitted,

INDUSTRIAL BIO-TEST LABORATORIES, INC.

Prepared by: Randy L. Rhudy
Randy L. Rhudy, B.S.
Assistant Toxicologist
Inhalation Toxicity

Approved by: John W. Goode
John W. Goode, Ph.D.
Manager
Decatur Research Laboratories

mk

TABLE I

TEST MATERIAL: Acid Orange 2GN

Acute Dust Inhalation Toxicity Study - Rats

Mortality Data

| Group No. | Number of Animals | Time of Deaths |
|---|---|---|
| T-I | 1 (Accidental death) | |
| | 2 | 4 Hrs.<br>Day 1 |
| T-II | 1 | 7 Hrs. |
| | 6 | Day 1 |
| | 1 | Day 3 |
| T-III | 5 | |
| | 2 | >8<18 hrs.<br>Day 1 |

TABLE II

TEST MATERIAL: Acid Orange 2GN

Particle Size Distribution Data

| Particle Size Range (microns) | Number of Particles Counted | Percent of Total Counted |
|---|---|---|
| Group I | | |
| 1-5 | 141 | 33.9 |
| 6-10 | 115 | 27.6 |
| 11-25 | 128 | 30.8 |
| > 25 | 32 | 7.7 |

The total number of particles counted were 416. The smallest and largest particles observed were 1 and 200 microns, respectively.

| | | |
|---|---|---|
| Group II | | |
| 1-5 | 38 | 8.1 |
| 6-10 | 150 | 31.9 |
| 11-25 | 252 | 53.6 |
| > 25 | 30 | 6.4 |

The total number of particles counted were 470. The smallest and largest particles observed were 1 and 150 microns, respectively.

| | | |
|---|---|---|
| Group III | | |
| 1-5 | 31 | 6.3 |
| 6-10 | 74 | 15.1 |
| 11-25 | 358 | 72.9 |
| > 25 | 28 | 5.7 |

The total number of particles counted were 491. The smallest and largest particles observed were 1 and 100 microns, respectively.

Pathologist's Statement

Complete necropsies were done on all rats that lived through the expe ment when the study was terminated at the end of the 14-day post-exposur observation period. Similar examinations were done, as quickly after death as possible, on all rats that died during the experiment.

No gross tissue changes attributable to the effects of the test material were observed in any of the rats that lived through the experiment, or in any of the rats in treatment group T-I that died during the study.

Gross tissue changes observed at necropsy of rats that died during the study were:

1. Thin clear (serous) fluid in the thorax and test material in the gastrointestinal tract in rats in treatment group T-II. Coagulated blood (erythrocytes present on microscopic examination) was found in the gastro-intestinal tract of 1 male rat in this group.

2. Thin clear (serous) fluid in the thorax of rats in treatment group T-III.

The changes observed in T-II and T-III animals which died during the study were considered effects of the test material.

D. J. Sullivan, D. V. M.
Diplomate, American College
of Veterinary Pathologists

## PROCEDURE FOR ACUTE DUST INHALATION TOXICITY STUDY

Young adult albino rats were employed as test animals. The rats were selected after having been under observation for at least 5 days to insure their general health and suitability for testing. The animals were housed in stock cages and permitted a standard laboratory diet* plus water ad libitum, except during inhalation exposure.

During the exposure period, observations were made with respect to incidence of mortality and reactions displayed. At the end of the exposure period, the rats were returned to their cages for observation.

A body weight was determined for each animal prior to inhalation exposure and for each surviving animal at the end of the observation period. The data were recorded as an index to growth.

Necropsy examinations were scheduled to be conducted upon all animals which might succumb during the test period and upon those sacrificed at the end of the observation period.

Test animals were exposed in a specially constructed inhalation chamber. The chamber was designed so that the animals could be introduced into the test atmosphere after the desired dust concentration was established. Each animal was caged separately during exposure to minimize filtration of inspired air by animal fur.

Dust was suspended with a specially designed dust shaker mechanism capable of producing steady concentrations over a long period of time. A high-velocity stream of clean, dry air (-40°C dewpoint) was passed through the test material. The air-jet velocity was adjusted to obtain the desired

* Wayne LAB-BLOX for Rats, Allied Mills, Inc., Chicago, Illinois

concentration of suspended dust. The test atmosphere was then introduced into the exposure chamber at the top center, dispersed by a baffle plate and exhausted at the bottom of the chamber. Air flow rate through the system was measured with a rotameter connected in the air supply line upstream of dust contamination. The rotameter was calibrated with a wet-test meter after the exposure was completed.

The concentration of test material dust present in the exposure chamber was determined by sampling the test atmosphere in the breathing zone of the animals being exposed. The total weight of dust collected on a glass fiber filter** was divided by the total volume of air drawn through the filter during the sampling period. Air flow rate for sampling was regulated by a calibrated limited orifice. The average analytical concentration of airborne dust was obtained by repeated air sampling. Whenever possible, the $LC_{50}$ was calculated using the method of Litchfield and Wilcoxon***.

A sample of airborne dust was collected from the exposure chamber for the purpose of conducting a microscopic determination of particle size distribution. Particles were counted with respect to 4 size ranges, viz., 5 microns or smaller, 6 to 10 microns, 11 to 25 microns and larger than 25 microns. Particles less than 10 microns are generally considered to be respirable. The smallest particle which can be detected by the light-field technique employed is approximately 1 micron. The largest particle observed was also recorded.

** Gelman Instrument Co., Ann Arbor, Michigan; Type A filter, advertised as 99.7 percent efficient, 0.3 micron DOP aerosol test.

*** Litchfield, J. T., Jr. and Wilcoxon, F., "A Simplified Method of Evaluating Dose-Effect Experiments," J. Pharm. & Exp. Ther. 96, 99 (1949).

UNIVERSITY OF MIAMI
CORAL GABLES, FLORIDA 33124

Report No. 52

UM No. 87

Mailing Address:
RESEARCH AND TEACHING CENTER
OF TOXICOLOGY
SCHOOL OF MEDICINE
P. O. BOX 248216

Location:
SOUTH CAMPUS
BUILDING 6

# ACUTE DUST INHALATION TOXICITY in OSBORNE-MENDEL RATS

UM NO. 87 Acid Orange 2GN 100%; Mix 12 Standard; 1201-00

(TRC 76-1016; UM No. 87)

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Test material: compound dried over night at 60°C. Color: "Rusty" Orange

No. of rats exposed: 5 males ( 115 - 130 gm )
5 females ( 130 - 145 gm )

Capacity of exposure chamber: approx. 300 liters

Exposure time: one hour

Dust "dropped" into exposure chamber - during one-hour exposure: 578 gm
(through 60 mesh sieve, opening 0.25 mm)

Air flow into exposure chamber: 22.0 liters/minute

Air flow through MSA Dust Sampler (5.0 micron MSA filter): 8.5 liters/minute

Temperature in exposure chamber: 24 °C.

Atmospheric pressure and humidity in laboratory: 764 mm Hg, 81 %

RESULTS:

Concentration of compound in exposure chamber: 0.6833 mg/l or 683.3 mg/m$^3$
(0.7941, 0.6940, 0.6370, 0.6081 mg/l)

Mortality during exposure: males- 0/5 females- 0/5

Mortality after exposure: males- 5/5 females- 5/5
All males and 4 females died in approx. 15 hours (during night), the last female died 2 days after exposure.

~~Mean gain of body weight during 14 days after exposure: males- females-~~

SIGNS OF INTOXICATION:

There were no specific signs of intoxication during or immediately after the one hour exposure period. However, lethargy was noted 4 to 6 hours following exposure. The animals died during the night. Postmortem changes of the animals revealed marked pulmonary congestion, patches of emphysema, and hemorrhagic areas throughout the lungs. There was also some marginal emphysema. The entire gastroenteric tract showed a moderate degree of congestion. The heart was well contracted.

Note: For analysis, one (1) minute air samples were taken 5, 15, 30 and 50 minutes after the start of exposure. The concentration reported is a mean of these values.

According to the "Code of Federal Regulations", title 21, chapter one, page 241, a highly toxic substance by inhalation is one that kills half or more than half of a group of white rats when inhaled continuously for a period of one hour or less, a concentration of 2 milligrams per liter by volume or less of a dust, "provided that such concentration is likely to be encountered by man when the substance is used in any reasonably forseeable manner".

The possibility can not be excluded that the rats ingested a portion of this compound during and after the one hour exposure period (since they lick themselves). There is also a possibility that there was some degree of skin absorption even though an effort was made to remove the compound from fur and skin at the end of the exposure by brushing and by use of a vacuum cleaner.

Conclusion: Acid Orange 2GN 100%, Mix 12 Standard, 1201-00, must be considered a highly toxic substance when inhaled by albino rats continuously for the period of one hour.

Wm. B. Deichmann

Wm. B. Deichmann, PhD, MD(hon)
Professor of Pharmacology

WBD:bj

February 17, 1977

ID# 02167

FINAL REPORT

PROJECT NUMBER 774-055

# EVALUATION OF THE ACUTE INHALATION TOXICITY OF ERIONYL ORANGE 3G

SUBMITTED TO:

Martin E. Bernstein, Ph.D.
The Ciba-Geigy Corporation
Ardsley, New York 10502

SUBMITTED BY:

Huntingdon Research Center
216 Congers Road
New City, New York 10956

PRINCIPAL INVESTIGATOR:

Charles E. Ulrich
Charles E. Ulrich
Manager
Inhalation Toxicology Department

LABORATORY TECHNICIAN:

John P. Hinz
John P. Hinz

APPROVED BY:

Charles O. Ward
Charles O. Ward, Ph.D.
Director, Toxicology

May 17, 1977

## I. OBJECTIVE

The objective of this study was to evaluate the acute inhalation toxicity of Erionyl Orange 3G at a single dust aerosol concentration of approximately one (1) milligram per liter of air.

## II. EXPERIMENTAL DESIGN

One (1) group of animals consisting of five (5) male and five (5) female rats was used for this study. These animals received a single four (4) hour exposure to a dust aerosol of Erionyl Orange 3G at an actual concentration of 1.02 milligrams per liter of air. All animals were held for fourteen (14) days post-exposure for observations of latent effects. All animals were observed during the exposure and daily during the post-exposure period for pharmaco-toxic signs. Body weights were recorded prior to exposure and after seven (7) and fourteen (14) days. All animals that died or were sacrificed after the observation period were necropsied and all major organs observed for macroscopic abnormalities.

## III. MATERIALS AND METHODS

### A. Animals

Five (5) male and five (5) female Sprague-Dawley derived rats, obtained from Charles River Breeding Laboratories, were used for this study. The animals were caged in groups of five (5) and provided Purina cubed diet and tap water *ad Libitum*. All animals were allowed at least seven (7) days to accommodate to the laboratory environment prior to the study. During the exposure animals were caged individually.

B. Experimental Material

The experimental compound, Erionyl Orange 3G DCT 7-0001; Ba. 94; 44/135293/100/0 was supplied by the sponsor. The compound was a fine reddish brown powder, and was assigned an internal identification number of GG-129.

C. Aerosol Generation and Exposure Methods

Figure 1 shows a schematic drawing of the dust generation system utilized for this experiment. The system operates as follows: The glass flask, auger assembly, and dust ejector assembly were mounted on a vibrating platform. Vibration from the platform maintained a flow of powder from the flask to the auger assembly. Rotational speed of the auger controlled the rate at which compound was fed to the dust ejector assembly. Dry, filtered, compressed air applied to the jet in the dust ejector created a negative pressure in the funnel, pulling powder down into a high velocity air stream. This dust laden air was then directed to a fifty-six (56) liter all-glass exposure chamber. The dust ejector was operated at 20 psig which resulted in a chamber airflow rate of 10 L/min.

D. Determination of Exposure Concentration

Exposure concentration was determined on both a nominal and actual basis. Nominal concentrations were calculated based on total chamber airflow and loss of material from the dust generator over the four (4) hour exposure period. Actual exposure concentrations were determined by drawing a known volume of chamber air through a pre-weighed glass fiber filter held in an open-face filter holder. The

filter was then re-weighed and the aerosol concentration calculated by dividing the filter weight gain by the sample volume. Eight (8) such samples were taken during the four hour exposure. The following table presents the exposure concentration data:

| Group No. | Chamber Concentration - mg/L | |
|---|---|---|
| | Nominal | Actual |
| I | 49.7 | 1.02 |

E. Evaluation of Aerosol Particle Size

Particle size analysis was conducted utilizing both the Andersen Cascade impactor and optical microscopy. Methods for the Cascade impactor were as follows: Pre-weighed glass fiber filter material, specially cut to fit the impactor, was used for collecting the aerosol on each stage. After sampling, these filters were again weighed. The difference in weight for each stage was then used to construct the particle size distribution graph, shown in figure 2. The aerosol had an Equivalent Aerodynamic Diameter (EAD) of 5.9μ with a geometric standard deviation ($\sigma g$) of 2.62.

Particle sizing with optical microscopy was conducted as follows: A very light particulate load was collected on 25 mm, Millipore, 0.45μ, grided membrane filters held in an open face filter holder. Sampling conditions were one (1) liter per minute for fifteen (15) seconds. The filter was mounted on a glass slide, cleared with immersion oil (refractive index 1.5150) and observed at 470X as rapidly as possible. There was no indication that the compound was

soluble in immersion oil, however, the possibility cannot be excluded. A total of at least three hundred (300) particles were counted and relative size distribution is indicated in the following table:

| Size Range μ | % of Particles Counted |
|---|---|
| 1-5 | 93.4 |
| 6-10 | 4.5 |
| 11-25 | 1.2 |
| >25 | 0.3 |

Care should be exerted when comparing particle size data obtained with a Cascade impactor to data obtained by optical methods. The two methods do not produce directly comparable data. When the data is to be utilized for obtaining insight into the pulmonary deposition and retention of an aerosol, then aerodynamic measurement methods are preferable. For true log-normal aerosol distributions the following relationship holds: $\ln EAD = \ln CMD + 3\ln^2\sigma g$.

## IV. RESULTS

### A. Observations for Signs of Toxicity

During the exposure, a moderate incidence of lacrimation, salivation, and dyspnea were observed in both sexes. By twenty-four (24) hours post-exposure all females and three (3) males had died. During the fourteen (14) day observation period the remaining two (2) males were in fair condition as judged by general appearance.

B. Body Weights

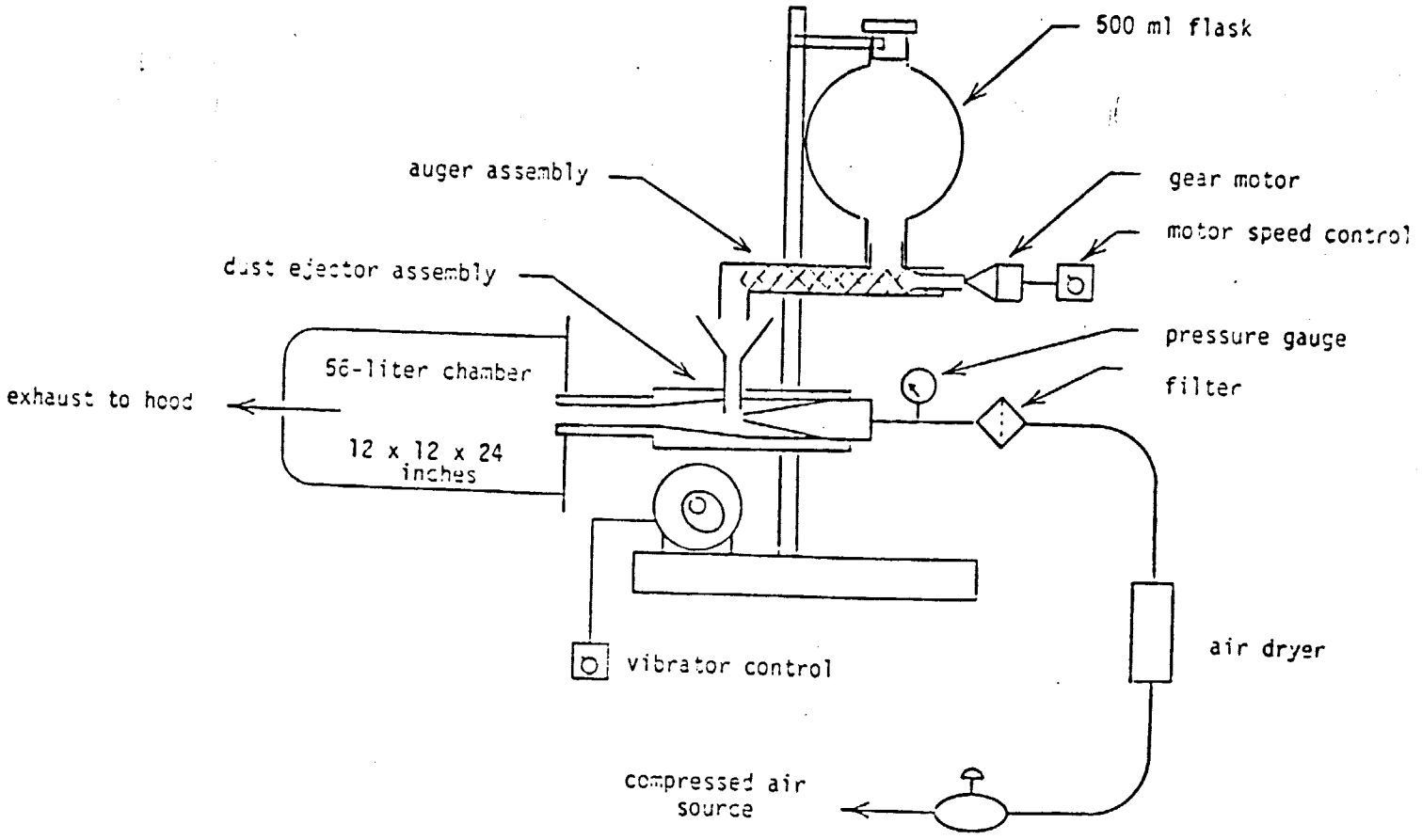
The two surviving males did not gain weight normally during the first week post-exposure, but were gaining body weight normally during the second week post-exposure. Table 1 presents individual and mean body weight data.

C. Observations at Necropsy

The lungs from those animals which died within twenty-four (24) hours post-exposure were severely affected. The observation at necropsy was "massive gray areas". The two (2) males which survived to fourteen (14) days post-exposure also exhibited pulmonary effects decribed as "gray areas" which were considered of moderate severity. Also noted were mottled or spotted livers.

FIGURE NO. 1

SCHEMATIC DRAWING OF DUST GENERATION SYSTEM



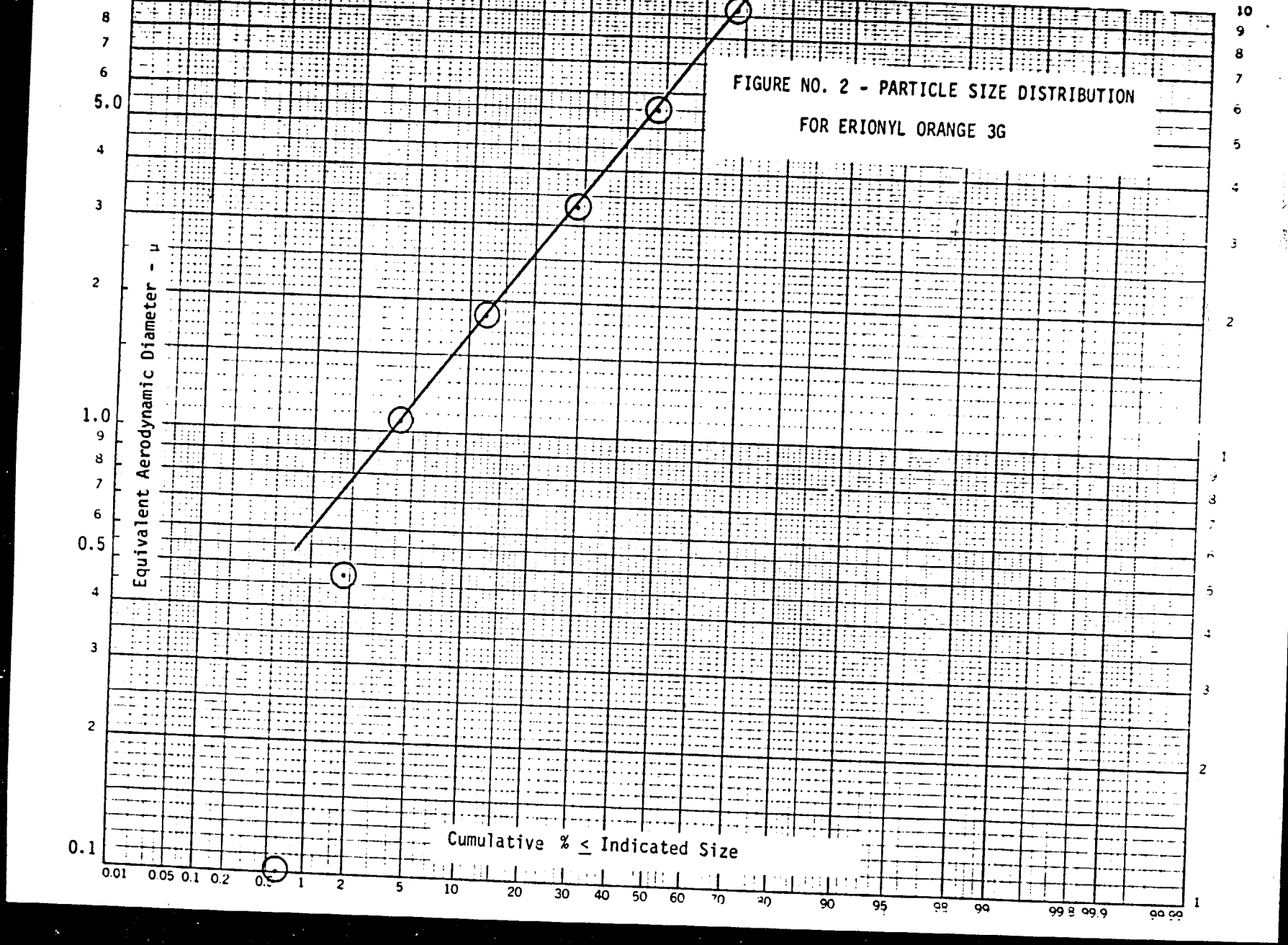


FIGURE NO. 2 - PARTICLE SIZE DISTRIBUTION
FOR ERIONYL ORANGE 3G
Equivalent Aerodynamic Diameter - μ
Cumulative % ≤ Indicated Size
10
9
8
7
6
5.0
4
3
2
1.0
0.5
0.1
0.01
0.05
0.1
0.2
1
2
5
10
20
30
40
50
60
70
80
90
95
98
99
99.8
99.9
99.99

TABLE 1

INDIVIDUAL AND MEAN BODY WEIGHT DATA

FOR RATS EXPOSED TO 1.04 mg/L OF ERIONYL ORANGE 3G

| ANIMAL NO. | BODY WEIGHTS - GRAMS | | |
|---|---|---|---|
| | PRE-EXPOSURE | 7 DAYS POST-EXPOSURE | 14 DAYS POST-EXPOSURE |
| Male | | | |
| 1 | 336 | 342 | 358 |
| 2 | 330 | Dead | - |
| 3 | 328 | Dead | - |
| 4 | 324 | 329 | 341 |
| 5 | 338 | Dead | - |
| $\bar{X}$ | 331.2 | 335.5 | 349.5 |
| Female | | | |
| 6 | 289 | Dead | - |
| 7 | 276 | Dead | - |
| 8 | 261 | Dead | - |
| 9 | 272 | Dead | - |
| 10 | 281 | Dead | - |
| $\bar{X}$ | 275.8 | | |

FD# 02196

Industrial BIO-TEST Laboratories, Inc.
1810 FRONTAGE ROAD
NORTHBROOK, ILLINOIS 60062

REPORT TO

CIBA-GEIGY CORPORATION

# ACUTE DUST INHALATION TOXICITY STUDY WITH ERIONYL ORANGE 3G IN ALBINO RATS

SEPTEMBER 27, 1977

IBT NO. 8562-10776

These study results apply only to acute exposure and should not be used to determine possible repeated or prolonged exposure effects.

*Industrial* **BIO-TEST** *Laboratories, Inc.*
1810 FRONTAGE ROAD
NORTHBROOK, ILLINOIS 60062

September 27, 1977

Dr. Martin E. Bernstein
Toxicologist
Industrial Medicine
CIBA-GEIGY Corporation
Ardsley, New York 10502

Dear Dr. Bernstein:

Re: IBT No. 8562-10776 - Acute Dust Inhalation Toxicity Study with Erionyl Orange 3G in Albino Rats

We are submitting herewith our laboratory report prepared in connection with the above study.

Very truly yours,

A. J. Frisque
President

AJF/fd

SUMMARY

Five (5) male and five (5) female rats were exposed for four (4) hours to a dust aerosol of Erionyl Orange 3G at a concentration of 1.02 milligrams per liter of air. Particle size characteristics of the aerosol were such that the Equivalent Aerodynamic Diameter (EAD) was 5.9μ with a geometric standard deviation (σg) of 2.62μ. There were no deaths during the exposure, however, all females and three (3) males died within twenty-four (24) hours post-exposure. During exposure both sexes exhibited a minor incidence of lacrimation, salivation and dyspnea. The surviving males did not gain body weight normally until the second week post-exposure. At necropsy, there was evidence of severe pulmonary damage.



HUNTINGDON RESEARCH CENTER 216 CONGERS ROAD NEW CITY, NEW YORK 10956

Industrial **BIO-TEST** Laboratories, Inc.

REPORT TO CIBA-GEIGY

ACUTE DUST INHALATION TOXICITY STUDY IN RATS

Test Material: Erionyl Orange 3G
Product #44/135293/100/0
Batch #94
Form Administered: Dust
Acute $LC_{50}$: < 2040 mg/m$^3$

Strain: Charles River Rats
Exposure Data: Whole body exposure - 4 hours in duration
Observation Period: 14 days
IBT No. 8562-10776

Generation of Test Material:

The dust was suspended by passing clear, dry air (-40°C dewpoint) through a dust shaker mechanism. The resulting air and dust mixture was then introduced into the exposure chamber.

| Chamber Conditions Group No. | Size (liters) | Atmospheric Pressure (inches Hg) | Temperature (°C) | Air Flow (l/min) |
|---|---|---|---|---|
| Test | 80 | 29.20 | 25 | 10.0 |

| Results Group No | Total Number of Animals Male/Female | Analytical Concentration (mg/m$^3$) | Mortality Male/Female | Mean Weight Gain Male/Female (grams) |
|---|---|---|---|---|
| Test | 5/5 | 2040 | 4/5 - 4/5 | 88/10 |

Remarks:

Reactions and mortality data are presented in Table I.

The average 2-week body weight gains for surviving animals were within normal limits.

Particle size distribution data are presented on pages 3 and 4.

The pathologist's statement is presented on page 5.

Respectfully submitted,

INDUSTRIAL BIO-TEST LABORATORIES, INC.

Prepared by: Jackie Weaver
Jackie Weaver, B.S.
Assistant Toxicologist
Inhalation Toxicity

Approved by: John W. Goode
John W. Goode, Ph.D.
Manager
Decatur Research Laborato

Data verified by
Quality Assurance Unit Virginia Boreham
Quality Assurance Supervisor

TABLE I

TEST MATERIAL: Erionyl Orange 3G

Acute Dust Inhalation Toxicity Study - Rats

Reactions and Mortality

| Group | Reaction | Number of Animals Affected | Time of Onset After Start of Exposure (min) | Duration |
|---|---|---|---|---|
| Test | Salivation | 2 | 30 | 210 min |
| | | 8 | 30 | Till death |
| | Death | 8 | > 8< 18 hrs | - |

Particle Size Distribution

A sample of airborne dust was collected from the test atmosphere for the purpose of conducting a microscopic determination of particle size distribution. Particles were counted with respect to 4 size ranges, viz. 5 microns or smaller, 6 to 10 microns, 11 to 25 microns and larger than 25 microns. Particles less than 10 microns are generally considered to be respirable. The smallest particle which can be detected by the light-field technique employed is approximately 1 micron. The smallest and largest particles observed were also recorded. In addition to light microscopy particle collection, samples were collected using the Delron Impactor. Light microscopy determinations include all generated particles. The Delron Impactor includes only suspended particles collectable at a flow rate of 12.501 lpm.

TABLE II

TEST MATERIAL: Erionyl Orange 3G

Acute Dust Inhalation Toxicity Study - Rats

Particle Size Distribution Data (light microscopy)

| Particle Size Range (microns) | Number of Particles Counted | Percent of Total Counted |
|---|---|---|
| 1-5 | 18 | 8.1 |
| 6-10 | 48 | 21.6 |
| 11-25 | 66 | 29.7 |
| > 25 | 90 | 40.6 |

The total number of particles counted was 222.

The smallest and largest particles observed were 1 and 50 microns, respectively.

TABLE III

TEST MATERIAL: Erionyl Orange 3G

Acute Dust Inhalation Toxicity Study - Rats

Particle Size Distribution Data (Delron Impactor)

| Particle Size Range (microns) | Percent of Total |
|---|---|
| $\leq 0.5$ | 0.0 |
| 0.6-1.0 | 0.0 |
| 1.1-2.0 | 3.2 |
| 2.1-4.0 | 9.7 |
| 4.1-8.0 | 61.3 |
| 8.1-16.0 | 16.1 |
| $> 16.0$ | 9.7 |

CIBA-GEIGY Corporation
IBT No. 8562-10776
Test Material: Erionyl Orange 3G

Pathologist's Statement

This test material, under the conditions used in this experiment, was lethal to rats. All male and female rats used in this experiment died between 8 and 18 hours after exposure.

No gross tissue changes attributable to the effects of the test material were observed at necropsy of these rats.

D. J. Sullivan, D.V.M.
Diplomate, American College of
Veterinary Pathologists

June 20, 1977

## PROCEDURE FOR ACUTE DUST INHALATION TOXICITY STUDY

Young adult albino rats were employed as test animals. The rats were selected after having been under observation for at least 5 days to insure their general health and suitability for testing. The animals were housed in stock cages and permitted a standard laboratory diet* plus water ad libitum, except during inhalation exposure.

During the exposure period, observations were made with respect to incidence of mortality and reactions displayed. At the end of the exposure period, the rats were returned to their cages for observation.

A body weight was determined for each animal prior to inhalation exposure and for each surviving animal at the end of the observation period. The data were recorded as an index to growth.

Necropsy examinations were conducted upon all animals that succumbed during the test period and upon those that were sacrificed at the end of the observation period.

Test animals were exposed to the dust atmosphere in a specially constructed 80-liter stainless steel-glass inhalation chamber. The chamber was equipped with 8 individual compartments so that most animals could be held separate to prevent crowding during exposure.

The dust was generated with a dust shaker mechanism capable of producing a steady concentration over a long period of time. A stream of filtered, dry air (-40°C dewpoint) was passed through the test material and was adjusted throughout the study to maintain a desired concentration

* Wayne LAB-BLOX for Rats, Allied Mills, Inc., Chicago, IL.

of suspended dust. The dust atmosphere was introduced into the exposure chamber at the top center and exhausted at the bottom. Air flow rate through the system was measured with a rotameter connected in the air supply line upstream of dust contamination.

The concentration of test material dust present in the exposure chamber was determined by sampling the test atmosphere in the breathing zone of the animals being exposed. The total weight of dust collected on a glass fiber filter* was divided by the total volume of air drawn through the filter during the sampling period. Air flow rate for sampling was regulated by a calibrated limited orifice. The average concentration of airborne dust was obtained by repeated air sampling.

* Gelman Instrument Co., Ann Arbor, MI.: Type E filter, advertised as 99.7 percent efficient, 0.3 micron DOP aerosol test.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MAR 30 1995

EPA acknowledges the receipt of information submitted by your organization under Section 8(e) of the Toxic Substances Control Act (TSCA). For your reference, copies of the first page(s) of your submission(s) are enclosed and display the TSCA §8(e) Document Control Number (e.g., 8EHQ-00-0000) assigned by EPA to your submission(s). Please cite the assigned 8(e) number when submitting follow-up or supplemental information and refer to the reverse side of this page for "EPA Information Requests".

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Please address any further correspondence with the Agency related to this TSCA 8(e) submission to:

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Attn: TSCA Section 8(e) Coordinator
Office of Pollution Prevention and Toxics
U.S. Environmental Protection Agency
Washington, D.C. 20460-0001

EPA looks forward to continued cooperation with your organization in its ongoing efforts to evaluate and manage potential risks posed by chemicals to health and the environment.

Sincerely,

Terry R. O'Bryan

Terry R. O'Bryan
Risk Analysis Branch

Enclosure 12142A

# Triage of 8(e) Submissions

Date sent to triage: _____

NON-CAP CAP

Submission number: 12142A

TSCA Inventory: Y N D

---

Study type (circle appropriate):

Group 1 - Dick Clements (1 copy total)

ECO AQUATO

Group 2 - Ernie Falke (1 copy total)

ATOX SBTOX SEN w/NEUR

Group 3 - Elizabeth Margosches (1 copy each)

STOX CTOX EPI RTOX GTOX

STOX/ONCO CTOX/ONCO IMMUNO CYTO NEUR

Other (FATE, EXPO, MET, etc.): _____

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Notes:

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**entire document:** 0 1 2 **pages** 1,2,3 **pages** 1-3, labs

**Notes:**

**Contractor reviewer :** UPS **Date:** 2/16/95

CECATS\TRIAGE TRACKING DBASE ENTRY FORM

CECATS DATA:
Submission # 8EHQ- 0992-12142 SEQ. A

TYPE: (INT.) SUPP FLWP

SUBMITTER NAME: Ciba-Geigy Corporation

SUB. DATE: 09/04/92 OTS DATE: 09/10/92 CSRAD DATE: 02/09/95

INFORMATION REQUESTED: FLWP DATE:
0501 NO INFO REQUESTED
0502 INFO REQUESTED (TECH)
0503 INFO REQUESTED (VOL ACTIONS)
0504 INFO REQUESTED (REPORTING RATIONALE)

DISPOSITION:
(0639) REFER TO CHEMICAL SCREENING
(0678) CAP NOTICE

VOLUNTARY ACTIONS:
(0401) NO ACTION REPORTED
0402 STUDIES PLANNED/UNDERWAY
0403 NOTIFICATION OF WORKERS/OTHERS
0404 LABEL/MSDS CHANGES
0405 PROCESS/HANDLING CHANGES
0406 APP./USE DISCONTINUED
0407 PRODUCTION DISCONTINUED
0408 CONFIDENTIAL

CHEMICAL NAME:
Acid Orange 26N
Erionyl Orange 36

CAS#
68555-86-2
11

| INFORMATION TYPE: | | P F C |
|---|---|---|
| 0201 | ONCO (HUMAN) | 01 02 04 |
| 0202 | ONCO (ANIMAL) | 01 02 04 |
| 0203 | CELL TRANS (IN VITRO) | 01 02 04 |
| 0204 | MUTA (IN VITRO) | 01 02 04 |
| 0205 | MUTA (IN VIVO) | 01 02 04 |
| 0206 | REPRO/TERATO (HUMAN) | 01 02 04 |
| 0207 | REPRO/TERATO (ANIMAL) | 01 02 04 |
| 0208 | NEURO (HUMAN) | 01 02 04 |
| 0209 | NEURO (ANIMAL) | 01 02 04 |
| 0210 | ACUTE TOX. (HUMAN) | 01 02 04 |
| 0211 | CHR. TOX. (HUMAN) | 01 02 04 |
| (0212) | ACUTE TOX. (ANIMAL) | 01 02 04 |
| 0213 | SUB ACUTE TOX (ANIMAL) | 01 02 04 |
| 0214 | SUB CHRONIC TOX (ANIMAL) | 01 02 04 |
| 0215 | CHRONIC TOX (ANIMAL) | 01 02 04 |

| INFORMATION TYPE: | | P F C |
|---|---|---|
| 0216 | EPI/CLIN | 01 02 04 |
| 0217 | HUMAN EXPOS (PROD CONTAM) | 01 02 04 |
| 0218 | HUMAN EXPOS (ACCIDENTAL) | 01 02 04 |
| 0219 | HUMAN EXPOS (MONITORING) | 01 02 04 |
| 0220 | ECO/AQUA TOX | 01 02 04 |
| 0221 | ENV. OCCC/REL/FATE | 01 02 04 |
| 0222 | EMER INCI OF ENV CONTAM | 01 02 04 |
| 0223 | RESPONSE REQEST DELAY | 01 02 04 |
| (0224) | PROD/COMP/CHEM ID | 01 02 04 |
| 0225 | REPORTING RATIONALE | 01 02 04 |
| 0226 | CONFIDENTIAL | 01 02 04 |
| 0227 | ALLERG (HUMAN) | 01 02 04 |
| 0228 | ALLERG (ANIMAL) | 01 02 04 |
| 0239 | METAB/PHARMACO (ANIMAL) | 01 02 04 |
| 0240 | METAB/PHARMACO (HUMAN) | 01 02 04 |

| INFORMATION TYPE: | | P F C |
|---|---|---|
| 0241 | IMMUNO (ANIMAL) | 01 02 04 |
| 0242 | IMMUNO (HUMAN) | 01 02 04 |
| (0243) | CHEM/PHYS PROP | 01 02 04 |
| 0244 | CLASTO (IN VITRO) | 01 02 04 |
| 0245 | CLASTO (ANIMAL) | 01 02 04 |
| 0246 | CLASTO (HUMAN) | 01 02 04 |
| 0247 | DNA DAM/REPAIR | 01 02 04 |
| 0248 | PROD/USE/PROC | 01 02 04 |
| 0251 | MSDS | 01 02 04 |
| 0299 | OTHER | 01 02 04 |

~~ATOX~~

TRIAGE DATA: NON-( ) INVENTORY
(Y)
CAS SR NO
IN TERMIN

ONGOING REVIEW
YES (DROP/REFER)
NO (CONTINUE)
REFER

SPECIES
Rat

TOXICOLOGICAL CONCERN:
LOW
(MED)
HIGH

USE:

PRODUCTION:

COMMENTS

12142A

M

Acute inhalation toxicity is of moderate concern based on the results of four separate tests. In the initial study, 4-hour exposures to Charles River rats (5/sex/group) at concentrations of 61, 570, and 5,100 $mg/m^3$ resulted in mortality rates of 2/10, 8/10, and 7/10, respectively. Necropsy findings included thin, clear (serous) fluid in the thorax at the two highest dose groups. In a subsequent study, Osborne-Mendel rats (5/sex) were exposed to the test material for one hour at a mean concentration of 680 $g/m^3$. Lethargy was noted 4-6 hours post-exposure, and all animals died 15-48 hours post-exposure; post-mortem examinations revealed marked pulmonary congestion, patches of emphysema, and hemorrhagic areas throughout the lungs. In the third study, Sprague-Dawley rats (5/sex) were exposed to the test material for four hours at a concentration of 1,020 $mg/m^3$. All females and 3/5 males died within 24 hours post-exposure, and severe pulmonary damage was noted at necropsy. In the final study, Charles River rats (5/sex) were exposed to the test material for four hours at a concentration of 1,020 $mg/m^3$. Mortality rates were 4/5 for both sexes, but no gross tissue changes were observed at necropsy.